species. In Poonch Valley *Tor putitora* (Ham.) is abundantly found in Sooran torrent, Betarh nallah, Poonch River, Mandi stream and Baffliaz, all of which are torrential streams with gravelly bottoms and partially submerged boulders.

Khan (1934) observed that the allied species *Tor tor* (Ham.) occurs in all the hill-tracts of the Punjab except the snow-fed streams whose temperature falls below 60°F in summer. As almost all the streams which contain *Tor putitora* (Ham.) in Poonch Valley are snow-fed streams, it is evident that the putitor mahseer has a greater ecological tolerance and is better adapted to subsist in colder temperatures than *Tor tor* (Ham.).

Das (1960) described the mahseers of the Doon Valley and observed that in *Tor putitora* (Ham.) of the Doons the lips are extensible and sometimes produced with the snout into greatly expanded and swollen lobes for suction, feeding or attachment to rocks in fast-flowing mountain streams. The extraordinary thickening of the lips is not so well-marked in the specimens obtained from Poonch Valley.

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23. DOES FORMALIN PERMIT THE LARVAL DEVELOPMENT IN *AEDES AEGYPTI* AND *CULEX PIPIENS FATIGANS*?

INTRODUCTION

When a six month study was made on the ecology of mosquito larvae distributed in various localities of Tiruchirapalli, the presence of *Aedes aegypti* larvae was accidentally noted in the specimen bottles containing formalin in the post graduate laboratory. So far no report has been published on occurrence of the organisms including mosquito larvae in formalin. In this paper results of the survival capacity of *A. aegypti* larvae in various concentrations of formalin are compared with that of *Culex pipiens fatigans*. To find out whether the mosquito larvae of any species undergo normal development in the formalin and to

prove the selective preference of *A. aegypti* for container habitats an experiment was designed using different concentrations of formalin.

Material and Methods

C. pipiens fatigans and *A. aegypti* larvae were collected from a ditch and a broken pot respectively. Formalin concentrations ranging from 0.025% to 0.125% were prepared. Fifteen fourth instar larvae were added to the bottles containing 200 ml of formalin solution of these concentrations. The number of larvae that pupated and emerged as adults was noted. Each experiment was repeated for four times.

Results

The formalin concentrations ranging from 0.025% to 0.075% permitted the survival, pupation and adult emergence of *A. aegypti* and *C. pipiens fatigans* larvae. But the number of larvae that survived, pupated and emerged as adults were high in *A. aegypti*. The larvae belonging to both species did not survive in 0.125% formalin concentration. But the time taken by *A. aegypti* larvae to die was longer than that of *C. pipiens fatigans*. (Tables 1 and 2).

Table 1

The Efficiency of *A. aegypti* and *C. pipiens fatigans* larvae to Pupate in various Concentrations of formalin

Concentration	Number of larvae used		Number of larvae pupated	
	A. aegypti	*C. pipiens fatigans*	*A. aegypti*	*C. pipiens fatigans*
0.025% ..	15	15	11.50±1.29	6.25±0.96
0.050% ..	15	15	9.00±0.82	3.00±0.82
0.075% ..	15	15	7.50±1.29	1.50±0.29
0.100% ..	15	15	4.25±0.96	..*
0.125% ..	15	15	..@	..@

* In 0.100% all *C. pipiens fatigans* larvae died within 12 to 15 hours.
@ In 0.125% all *C. pipiens fatigans* larvae died within 2 to 4 hours and all *A. aegypti* larvae died in 2 days
Values are mean±SD.

Table 2

The Efficiency of *A. aegypti* and *C. pipiens fatigans* Larvae to Emerge as Adult In various concentrations of formalin

Concentration	Number of larvae used		Number of adults emerged	
	A. aegypti	*C. pipiens fatigans*	*A. aegypti*	*C. pipiens fatigans*
0.025% ..	15	15	9.25±0.96	3.25±0.50
0.050% ..	15	15	5.50±0.58	3.25±0.96
0.075% ..	15	15	5.25±0.96	2.75±0.50
0.100% ..	15	15	3.50±0.70	..
0.125% ..	15	15	..	..

Values are mean±SD.

Discussion

Bates (1949) classified larval habitats into three categories namely, permanent, transient and container. Larvae belonging to various species inhabit different habitats. Some species prefer a wide range of habitats, while others limit their choice to a few habitats. Thus *C. pipiens fatigans* breeds in all sorts of natural habitats. Similarly *Anopheles subpictus* is found breeding in temporary small sunlit pools, drains and ditches, rice fields and rock pools. Many of the principal and potentially dangerous vectors of mosquito borne viruses breed in specific container habitats. So the larvae of *A. aegypti* are found mainly in the container habitats (Goma 1966). *A. africanus* and *Haemogogus* are found in tree holes, while larvae of *A. simpsoni* are observed in axils of banana and pine-apple leaves.

Vijayakumar (1977) reported the occurrence of *A. aegypti* larvae in container habitats such as bottles, tree holes, discarded tins and broken pots. He also reported the absence of *C. pipiens fatigans* larvae in container habitats. In this present report it is found out that the low concentrations of formalin permitted the survival of these two species of mosquito larvae. But the data clearly shows that the larvae of *A. aegypti* thrived well in formalin solution than *C. pipiens fatigans* larvae. The reason for the poor survival capability of *C. pipiens fatigans* when compared to *A. aegypti* larvae in formalin solution may be attributed to its habitat preference. The bottles are included under container habitat. On rearing these two species, one characteristic of container habitat and other not, naturally the former did well. Thus the present study establishes that the low concentrations of formalin permit the normal development of mosquito larvae and that the habitat has an influence over the development.

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